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EXAMINER	
ANDREWS, LEON T	

ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	**Application No.** 10/809,591	**Applicant(s)** BANERJEE ET AL.	
	Examiner LEON ANDREWS	**Art Unit** 2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *14 April 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1 and 3-6* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1, 3-6* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application

6) ☐ Other: _____.

DETAILED ACTION

RCE

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on January 28, 2008 has been entered.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1 and 3-6 are being rejected under 35 U.S.C. 103(a) as being unpatentable over Firoiu et al. (Patent No.: US 7,149,664) in view of Forest et al. (Pub. No.: US 2004/0081079 A1).

Regarding Claim 1, Firoiu et al. discloses a method for dynamically provisioning computer system resources (method for modeling dynamics of a queue, column 2, lines 9-11), the method comprising:

monitoring a connection performance parameter of a data communications port (each node (connection), having at least one ingress and one egress port is regulated (monitored) by a node congestion control module which also regulates the average queue size, column 3, lines 37-48) operating in a data communications protocol (TCP as the transport layer protocol, column 3, lines 53-54) having a connection backlog queue (Fig. 13, Queue) having a connection backlog queue size (Fig. 13, Queue Size), the connection backlog queue comprising one or more connection requests (end-system congestion control module responds to the node congestion control module's acknowledgement (requests) packets indicating congestion, by decreasing the sending rate, column 3, lines 37-60),

wherein monitoring a connection performance parameter of a data communications port (each node (connection), having at least one ingress and one egress port is regulated (monitored) by a node congestion control module which also regulates the average queue size, column 3, lines 37-48) further comprises:

receiving a connection request (data that is sent (request) is acknowledged by a receiver, column 2, lines 1-2) and determine that the connection backlog queue is full (data is received in buffer whereby the queue size exceeds a preset threshold, column 1, lines 50-51); and

calculating an average accept processing time (data that a link can process in a given time, column 3, lines 34-35) and calculating an average connection request arrival interval (Fig. 15, I; over a time period, I, sampling the queue size every 6 seconds to determine the average

queue size, column 10, lines 50-51; averaging interval is equal to the period and the value does not change when the interval is translated in time, column 11, lines 43-46) for the connection backlog queue, wherein:

the accept processing time comprises the time interval between accepting connections (round transmission trip time for data to be sent from the first node to the second node and an acknowledgement to be received by the first node, column 2, lines 18-20) ; and

the connection request arrival interval (Fig. 15, I, RATE, sending rate verses time for communications column 3, lines 3-4; rates based on the minimum time for a packet being sent, column 10, lines 63-65; over a given time period, I, the exponentially weighted moving average (rate) is recursively based on the value of I, column 10, lines 51-58; sending rate over time increases or decreases depending on whether or not the packet is dropped, column 11, lines 37-40) comprises the inverse of the connection request rate, the connection request rate comprising a rate (Fig. 15, RATE) at which connection requests arrive and are placed in the connection backlog queue (Fig. 13, Queue); and

changing the connection backlog queue size in dependence upon the monitored connection performance parameter without interrupting the operation of the data communications port and without user intervention (Fig. 2, 210, 220 and 230, evaluate the Queue and control functions and make a determination based on traffic conditions) wherein changing the connection backlog queue size further comprises increasing the connection backlog queue size if the accept processing time is greater than the connection request arrival interval (Fig. 12, 1200, 1210, 1220, maximum traffic condition (greater processing time), use maximum queue law function, set

buffer size to a value greater than the minimum buffer size).

Regarding Claim 3, Firoiu et al. discloses a method of claim 1 wherein:

monitoring a connection performance parameter (management of a queue at a node in the network, column 1, lines 14-15) further comprises monitoring a connection backlog queue load (Fig. 10, 1020, a maximum value at Qmax; node receive packets which are stored and queued in a buffer, column 3, lines 38-41); and

changing the connection backlog queue size further comprises changing the backlog queue size in dependence upon the connection backlog queue load (Figs. 10. 1000, 1010, calculate the maximum queue and designate the Qmax to a point above the maximum queue).

Regarding Claim 4, Firoiu et al. discloses a method of claim 1 wherein:

monitoring a connection performance parameter (management of a queue at a node in the network, column 1, lines 14-15) further comprises calculating an average round trip time (calculation of the average round trip time for data to be sent from the first node to the second node and acknowledgement to be received by the first node, column 2, lines 18-21) for a portion of a connection handshake (Fig. 1, link utilization between the first and second nodes, column 2, lines 16-17) and calculating an average arrival interval (Fig. 15, P,I) between connection requests; and

changing the connection backlog queue size further comprises increasing the connection backlog queue size (the queue size is increased when the buffer size is increased, column 1, lines 35-36) if the average arrival interval is less than the average round trip time ((Fig. 15, P, I) < (calculation of the average round trip time for data to be sent from the first node to the second

node and acknowledgement to be received by the first node, column 2, lines 18-21)) and decreasing the connection backlog queue size (Fig. 6, Qmin; decreasing the size of the average queue in the buffer, column 4, line 9-10) if the average arrival interval is greater than the average round trip time ((Fig. 15, P,I) > (calculation of the average round trip time for data to be sent from the first node to the second node and acknowledgement to be received by the first node, column 2, lines 18-21)).

Regarding Claim 5, Firoiu et al. discloses a method of claim 1 wherein:

monitoring a connection performance parameter (management of a queue at a node in the network, column 1, lines 14-15) further comprises calculating a bandwidth delay product (resource demand exceeds capacity when data is not sent as quickly as it is received, column 1, lines 20-23) for a connection backlog queue (Fig. 13, Queue and Queue size) and comparing the bandwidth delay product with the queue size (operation point can be compared to the queue size, column 12, lines 31-32); and

changing the connection backlog queue size (Fig. 13; traffic conditions change causing the node to operate in overload outside the normal operating conditions, column 8, lines 1-3) further comprises changing the backlog queue size to at least the bandwidth delay product if the connection backlog queue size is less than the bandwidth delay product ((Fig. 13, Queue and Queue size) < (resource demand exceeds capacity when data is not sent as quickly as it is received, column 1, lines 20-23)).

Regarding Claims 6, Firoiu et al. discloses a method of claim 1 wherein:

monitoring a connection performance parameter (management of a queue at a node in the network, column 1, lines 14-15) further comprises measuring accept processing time (Fig. 15, P, I); and

changing the connection backlog queue size further comprises changing the backlog queue size in dependence upon accept processing time (Fig. 15, variation in the sending rate is reflected in a variation in the queue size, column 11, lines 41-42).

Regarding Claims 1 and 4, Firoiu et al. teaches all the limitations of the claim including a communication port and a queue. But, Firoiu et al. fails to specifically teach a connection request.

However, Forest et al. teaches that a connection request is detected for the transmission start sequence, paragraph [0728], page 25, lines 4-6.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Forest et al.'s connection request because this would initiate a proper connection request to the network before the actual frame or symbol is transmitted, paragraph [0728], page 25, lines 2-4.

Citation of Pertinent Prior Art

2. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Creemer (Patent Number: 5,951,644) discloses system for predicting and managing network performance by managing and monitoring resource utilization and connection of network.

Skirmont (Patent Number: US 6,252,848 B1) discloses system performance in a data network through queue management based on ingress rate monitoring.

Walrand et al. (Patent No.: US 6,647,413 B1) discloses method and apparatus for measuring performance in packet switched networks.

Aweya et al. (Patent No.: US 6,901,593 B2) discloses active queue management with flow proportional buffering.

Alam et al. (Patent No.: US 7,069,313 B2) discloses methods and systems for preventing socket flooding during denial of service attacks.

Aznar et al. (Patent No.: US 6,754,182 B1) discloses method and apparatus for policing cell-based traffic.

Azenkot et al. (Patent No.: US 6,791,995 B1) discloses multichannel, multimode docsis headend receiver.

Response to Arguments

3. Applicant's arguments filed April 14, 2008 have been fully considered, but they are not persuasive.

- In the remarks on page 6 of the amendment, applicant contends that Office Action admits on pages 6-7 that Firoiu et al. does not disclose the limitations in claim 2 which are now recited in amended claim 1.

- The examiner respectfully disagrees and contends that for claim 2, the Office Action on pages 6-7 states that "a connection request" is an obvious variation of Firoiu et al.'s "a network operation", and the limitations of claim 2 are disclosed by Firoiu et al.

- In remarks on pages 6, 8-11 of the amendment, applicant contends that since Firoiu et al. does not disclose the elements of independent claim 1 including the processing/interval times and the queue size. Thus, the elements of dependent claims 3-6 are also not disclosed. As such, claims 3-6 are patentable and allowable.
- The examiner respectfully contends that for **Claims 1 and 4,** Firoiu et al. teaches all the limitations of the claim including a communication port and a queue. But, Firoiu et al. fails to specifically teach a connection request.

  However, Forest et al. teaches that a connection request is detected for the transmission start sequence, paragraph [0728], page 25, lines 4-6. Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to use Forest et al.'s connection request because this would initiate a proper connection request to the network before the actual frame or symbol is transmitted, paragraph [0728], page 25, lines 2-4. Thus, **Regarding Claim 1**, Firoiu et al. discloses a method for dynamically provisioning computer system resources (method for modeling dynamics of a queue, column 2, lines 9-11), the method comprising: monitoring a

connection performance parameter of a data communications port (each node (connection), having at least one ingress and one egress port is regulated (monitored) by a node congestion control module which also regulates the average queue size, column 3, lines 37-48) operating in a data communications protocol (TCP as the transport layer protocol, column 3, lines 53-54) having a connection backlog queue (Fig. 13, Queue) having a connection backlog queue size (Fig. 13, Queue Size), the connection backlog queue comprising one or more connection requests (end-system congestion control module responds to the node congestion control module's acknowledgement (requests) packets indicating congestion, by decreasing the sending rate, column 3, lines 37-60), wherein monitoring a connection performance parameter of a data communications port (each node (connection), having at least one ingress and one egress port is regulated (monitored) by a node congestion control module which also regulates the average queue size, column 3, lines 37-48) further comprises: receiving a connection request (data that is sent (request) is acknowledged by a receiver, column 2, lines 1-2) and determine that the connection backlog queue is full (data is received in buffer whereby the queue size exceeds a preset threshold, column 1, lines 50-51); and calculating an average accept processing time (data that a link can process in a given time, column 3, lines 34-35) and calculating an average connection request arrival interval (Fig. 15, I; over a time period, I, sampling the queue size every 6 seconds to determine the

average queue size, column 10, lines 50-51; averaging interval is equal to the period and the value does not change when the interval is translated in time, column 11, lines 43-46) for the connection backlog queue, wherein: the accept processing time comprises the time interval between accepting connections (round transmission trip time for data to be sent from the first node to the second node and an acknowledgement to be received by the first node, column 2, lines 18-20) ; and the connection request arrival interval (Fig. 15, I, RATE, sending rate verses time for communications column 3, lines 3-4; rates based on the minimum time for a packet being sent, column 10, lines 63-65; over a given time period, I, the exponentially weighted moving average (rate) is recursively based on the value of I, column 10, lines 51-58; sending rate over time increases or decreases depending on whether or not the packet is dropped, column 11, lines 37-40) comprises the inverse of the connection request rate, the connection request rate comprising a rate (Fig. 15, RATE) at which connection requests arrive and are placed in the connection backlog queue (Fig. 13, Queue); and changing the connection backlog queue size in dependence upon the monitored connection performance parameter without interrupting the operation of the data communications port and without user intervention (Fig. 2, 210, 220 and 230, evaluate the Queue and control functions and make a determination based on traffic conditions) wherein changing the connection backlog queue size further comprises increasing the connection backlog queue size if the accept

processing time is greater than the connection request arrival interval (Fig. 12, 1200, 1210, 1220, maximum traffic condition (greater processing time), use maximum queue law function, set buffer size to a value greater than the minimum buffer size). Further, **Regarding Claim 3,** Firoiu et al. discloses a method of claim 1 wherein: monitoring a connection performance parameter (management of a queue at a node in the network, column 1, lines 14-15) further comprises monitoring a connection backlog queue load (Fig. 10, 1020, a maximum value at Qmax; node receive packets which are stored and queued in a buffer, column 3, lines 38-41); and changing the connection backlog queue size further comprises changing the backlog queue size in dependence upon the connection backlog queue load (Figs. 10. 1000, 1010, calculate the maximum queue and designate the Qmax to a point above the maximum queue). **Regarding Claim 4,** Firoiu et al. discloses a method of claim 1 wherein: monitoring a connection performance parameter (management of a queue at a node in the network, column 1, lines 14-15) further comprises calculating an average round trip time (calculation of the average round trip time for data to be sent from the first node to the second node and acknowledgement to be received by the first node, column 2, lines 18-21) for a portion of a connection handshake (Fig. 1, link utilization between the first and second nodes, column 2, lines 16-17) and calculating an average arrival interval (Fig. 15, P,I) between connection requests; and changing the connection backlog queue size further comprises increasing the connection

backlog queue size (the queue size is increased when the buffer size is increased, column 1, lines 35-36) if the average arrival interval is less than the average round trip time ((Fig. 15, P, I) < (calculation of the average round trip time for data to be sent from the first node to the second node and acknowledgement to be received by the first node, column 2, lines 18-21)) and decreasing the connection backlog queue size (Fig. 6, Qmin; decreasing the size of the average queue in the buffer, column 4, line 9-10) if the average arrival interval is greater than the average round trip time ((Fig. 15, P,I) > (calculation of the average round trip time for data to be sent from the first node to the second node and acknowledgement to be received by the first node, column 2, lines 18-21)). **Regarding Claim 5,** Firoiu et al. discloses a method of claim 1 wherein: monitoring a connection performance parameter (management of a queue at a node in the network, column 1, lines 14-15) further comprises calculating a bandwidth delay product (resource demand exceeds capacity when data is not sent as quickly as it is received, column 1, lines 20-23) for a connection backlog queue (Fig. 13, Queue and Queue size) and comparing the bandwidth delay product with the queue size (operation point can be compared to the queue size, column 12, lines 31-32); and changing the connection backlog queue size (Fig. 13; traffic conditions change causing the node to operate in overload outside the normal operating conditions, column 8, lines 1-3) further comprises changing the backlog queue size to at least the bandwidth delay product if the connection backlog queue

size is less than the bandwidth delay product ((Fig. 13, Queue and Queue size) < (resource demand exceeds capacity when data is not sent as quickly as it is received, column 1, lines 20-23)). **Regarding Claims 6,** Firoiu et al. discloses a method of claim 1 wherein: monitoring a connection performance parameter (management of a queue at a node in the network, column 1, lines 14-15) further comprises measuring accept processing time (Fig. 15, P, I); and - changing the connection backlog queue size further comprises changing the backlog queue size in dependence upon accept processing time (Fig. 15, variation in the sending rate is reflected in a variation in the queue size, column 11, lines 41-42). Therefore, the elements of claims 1-6 are disclosed and the claims are not allowable or patentable.

Conclusion

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Leon Andrews whose telephone number is (571) 270-1801. The examiner can normally be reached on Monday through Friday 7:30 AM to 5:00 PM EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Rao S. Seema can be reached on (571) 272-3174. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Seema S. Rao/

Supervisory Patent Examiner, Art Unit 2616

LA/la
June 20, 2008